

Remarks

The Office Action mailed April 26, 2005 has been carefully reviewed and the following remarks are made in consequence thereof.

Claims 1-25 are now pending in this application. Claims 1-25 stand rejected.

Applicants note the objections to the drawings. Formal drawings were submitted on March 31, 2004. A copy of that submission, including copies of the previously submitted formal drawings, is submitted herewith. For the reasons set forth above, Applicants request that the objections to the drawings be withdrawn.

The rejection of Claims 1-9, 11-18, and 21-25 under 35 U.S.C. § 102(b) as being anticipated by Chiles et al. (U.S. Patent No. 6,278,397 B1) is respectfully traversed.

Chiles et al. describe an altimeter that is controlled by a microprocessor 32 which includes, among its outputs, a frequency control signal. The frequency control signal is applied to a radio frequency (RF) oscillator 33 in order to control the output frequency of the oscillator. A biphase modulator 35 modulates the signal from the oscillator 33 in two phases, 180 degrees apart. The biphase modulated signal is, in the preferred embodiment, provided at a full power level and is attenuated by a controllable attenuator 37 before being transmitted through a transmitting antenna 39. Attenuator 37 is controlled by a transmitted power control signal from the microprocessor 32 in accordance with minimum power requirements for the altimeter to operate over the particular terrain and under the particular conditions prevailing at the time of operation, as determined by the clarity of an altitude signal received by the microprocessor 32. A noise source 41 is used to control the biphase modulation of the transmitted signal by providing a control signal to the biphase modulator 35. The control signal to the biphase modulator 35 is delayed somewhat, prior to receipt from the noise source 41, although the signal from the noise source 41 is effectively transmitted to the biphase modulator 35 the control signal to the biphase modulator 35 is delayed because the signal from the noise source 41 is first obtained from a first output bit of the reference delay circuit 63, then delayed in a first constant

delay circuit 67 and then in a vernier delay circuit 69. The delayed signal from the vernier delay circuit 69 controls the biphase modulator 35 in normal operation.

Claim 1 recites a method for randomly phase modulating a radar altimeter. The method comprises inputting an amplified random noise source into a voltage controlled oscillator and “applying an output of the voltage controlled oscillator to a transmitter and mixer of the radar altimeter to modulate transmissions of the radar altimeter and to demodulate reflected radar transmissions received by the radar altimeter”.

Chiles et al. do not describe, nor suggest, a method for randomly phase modulating a radar altimeter as recited in Claim 1. Rather, Chiles et al. describe a radar that is capable of switching in phase from zero degrees to 180 degrees based on an output of a noise source 41. More specifically, Chiles et al. describe that the noise source 41 is used to control biphase modulation of the transmitted signal by providing a control signal to the biphase modulator. Column 3, lines 51-53. Further, the VCO 57 of Chiles et al. is utilized, along with the frequency from RF oscillator 33, to create a sideband at single sideband modulator 55. Column 4, lines 8-18.

Also, Chiles et al. do not describe applying an output of the voltage controlled oscillator to a transmitter and mixer of the radar altimeter to modulate transmissions of the radar altimeter and to demodulate reflected radar transmissions received by the radar altimeter. Rather Chiles et al. describe bi-phase modulation and that a single side modulator provides a signal to a mixer 53. Column 4, lines 8-10.

For the reasons set forth above, Claim 1 is submitted to be patentable over Chiles et al.

Claims 2-7 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2-7 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-7 likewise are patentable over Chiles et al.

Claim 8 recites a method for randomly phase modulating a radar altimeter where the radar altimeter includes a voltage controlled oscillator having an output which modulates transmissions of the radar altimeter and demodulates reflected radar transmissions received by

the radar altimeter. The method comprises “configuring the voltage controlled oscillator to provide a random phase modulation source”.

Chiles et al. do not describe, nor suggest, configuring the voltage controlled oscillator to provide a random phase modulation source. Rather, Chiles et al. describe a radar that is capable of switching in phase from zero degrees to 180 degrees based on an output of a noise source 41. Further, Chiles et al. describe creating a sideband from a transmission frequency generated by oscillator 33 as modulated by a voltage controlled oscillator 57. Column 4, lines 11-13.

For the reasons set forth above, Claim 8 is submitted to be patentable over Chiles et al.

Claims 9, 11, and 12 depend, directly or indirectly, from independent Claim 8. When the recitations of Claims 9, 11, and 12 are considered in combination with the recitations of Claim 8, Applicants submit that dependent Claims 9, 11, and 12 likewise are patentable over Chiles et al.

Independent Claim 13 recites a radar altimeter comprising “a voltage controlled oscillator for modulating transmissions of said radar altimeter and demodulating reflected radar transmissions received by said radar altimeter”.

Chiles et al. do not describe, nor suggest, a voltage controlled oscillator for modulating transmissions of a radar altimeter and demodulating reflected radar transmissions received by the radar altimeter. Rather, Chiles et al. describe a radar that is capable of switching in phase from zero degrees to 180 degrees based on an output of a noise source 41. Further, Chiles et al. describe a VCO 57 that is utilized, along with the frequency from RF oscillator 33, to create a sideband at single sideband modulator 55. Column 4, lines 8-18. Further, Chiles et al. do not describe, nor suggest a holding circuit configured to sample a voltage from a random noise source. The noise source 41 of Chiles et al. is utilized to control biphase modulation of a transmitted signal by providing a control signal to the biphase modulator 35. Column 3, lines 51-53.

For the reasons set forth above, Claim 13 is submitted to be patentable over Chiles et al.

Claims 14-17 depend, directly or indirectly, from independent Claim 13. When the recitations of Claims 14-17 are considered in combination with the recitations of Claim 13, Applicants submit that dependent Claims 14-17 likewise are patentable over Chiles et al.

Independent Claim 18 recites a radar altimeter comprising a voltage controlled oscillator for modulating transmissions of the radar altimeter. The voltage controlled oscillator is configured to “randomly phase modulate the transmissions of said radar altimeter”.

Chiles et al. do not describe, nor suggest, a voltage controlled oscillator configured to randomly phase modulate the transmissions of said radar altimeter. Rather, Chiles et al. describe a radar that is capable of switching in phase from zero degrees to 180 degrees based on an output of a noise source 41. Further, Chiles et al. describe a VCO 57 that is utilized, along with the frequency from RF oscillator 33, to create a sideband at single sideband modulator 55. The signal from single sideband modulator 55 appears to only be used in demodulation.

For the reasons set forth above, Claim 18 is submitted to be patentable over Chiles et al.

Claim 21 depends from independent Claim 18. When the recitations of Claim 21 are considered in combination with the recitations of Claim 18, Applicants submit that dependent Claim 21 likewise is patentable over Chiles et al.

In addition, Claim 22 recites a circuit for randomly phase modulating transmissions of a radar altimeter and demodulating reflected radar transmissions received by the radar altimeter. The radar altimeter includes a “switch between said random noise source and said input of said amplifier, said switch configured to be open from the time a signal is transmitted by the radar altimeter until a reflected radar return signal is demodulated by the radar altimeter.”

Chiles et al. do not describe, nor suggest, a random noise source connected to an input of a voltage controlled oscillator. The noise source 41 of Chiles et al. is configured as a control signal to the biphase modulator 35 which allows the radar to switch in phase from zero degrees to 180 degrees. Column 3, lines 51-53. Chiles et al. also do not describe, nor suggest, either an amplifier having an output connected to the voltage controlled oscillator or a switch between the

random noise source and the input of an amplifier. Chiles et al. describe that an output of the noise source is a control signal that is delayed before being applied to a biphas modulator.

For the reasons set forth above, Claim 22 is submitted to be patentable over Chiles et al.

Claims 23-25 depend, directly or indirectly, from independent Claim 22. When the recitations of Claims 23-25 are considered in combination with the recitations of Claim 22, Applicants submit that dependent Claims 23-25 likewise are patentable over Chiles et al.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-9, 11-18, and 21-25 be withdrawn.

The rejection of Claims 10 and 19 under 35 U.S.C. § 103 as being unpatentable over Chiles et al. in view of Rauch (U.S. Patent No. 3,774,206) is respectfully traversed.

Chiles et al. is described above. Rauch describes at Column 7, lines 33-60 that an envelope detector removes the intermediate frequency and that a band pass filter extracts a sine component of a signal. The signal is further conditioned until a low pass filter passes virtually an only D.C. signal which drives the voltage controlled oscillator. As such, Chiles et al. in view of Rauch do not describe nor suggest a method which includes removing DC power from the voltage controlled oscillator for a time sufficient enough for an output signal of the voltage controlled oscillator to decay and restoring DC power to the voltage controlled oscillator as recited in Claim 10.

Furthermore, Claim 10 depends from independent Claim 8 which recites a method for randomly phase modulating a radar altimeter where the radar altimeter includes a voltage controlled oscillator used in modulation and demodulation. The method comprises "holding the phase of the modulation source substantially constant from a time when the radar altimeter transmits a radar signal until a time when a reflection of the transmitted radar signal is received by the radar altimeter."

Chiles et al. in view of Rauch do not describe, nor suggest, configuring the voltage controlled oscillator to provide a random phase modulation and dmodulaon source. Rather, Chiles et al. describe a radar that is capable of switching in phase from zero degrees to 180

degrees based on an output of a noise source 41. Further, Chiles et al. describe creating a sideband from a transmission frequency generated by oscillator 33 as modulated by a voltage controlled oscillator 57. Column 4, lines 11-13. Rauch describes a signal that is conditioned until a low pass filter passes virtually an only D.C. signal which is used to drive a voltage controlled oscillator. Further, Chiles et al. in view of Rauch do not describe, nor suggest, holding the phase of the modulation source substantially constant from a time when the radar altimeter transmits a radar signal until a time when a reflection of the transmitted radar signal is received by the radar altimeter.

For the reasons set forth above, Claim 8 is submitted to be patentable over Chiles et al. in view of Rauch.

Claim 10 depends from independent Claim 8. When the recitations of Claim 10 are considered in combination with the recitations of Claim 8, Applicants submit that dependent Claim 10 likewise is patentable over Chiles et al. in view of Rauch.

Rauch describes at Column 7, lines 33-60 that an envelope detector removes the intermediate frequency and that a band pass filter extracts a sine component of a signal. The signal is further conditioned until a low pass filter passes virtually an only D.C. signal which drives the voltage controlled oscillator. As such, Chiles et al. in view of Rauch do not describe nor suggest a radar altimeter configured to remove DC power from the voltage controlled oscillator after a reflected radar transmission is received by the radar altimeter as recited in Claim 19.

Furthermore, Claim 19 depends from independent Claim 18 which recites a radar altimeter comprising a voltage controlled oscillator for modulating transmissions of the radar altimeter. The voltage controlled oscillator is configured to “randomly phase modulate the transmissions of said radar altimeter”.

Chiles et al. in view of Rauch do not describe, nor suggest, a voltage controlled oscillator configured to randomly phase modulate the transmissions of said radar altimeter. Rather, Chiles et al. describe a radar that is capable of switching in phase from zero degrees to 180 degrees based on an output of a noise source 41. Further, Chiles et al. describe a VCO 57 that is utilized,

along with the frequency from RF oscillator 33, to create a sideband at single sideband modulator 55. The signal from single sideband modulator 55 appears to only be used in demodulation. Rauch describes a signal that is conditioned until a low pass filter passes virtually an only D.C. signal which is used to drive a voltage controlled oscillator.

For the reasons set forth above, Claim 18 is submitted to be patentable over Chiles et al. in view of Rauch.

Claim 19 depends from independent Claim 18. When the recitations of Claim 19 are considered in combination with the recitations of Claim 18, Applicants submit that dependent Claim 19 likewise is patentable over Chiles et al. in view of Rauch.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 10 and 19 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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